E & A
R
TPI

VOL. XIX October, 1943 No. 4

U.S.A. 126

THE PAN-PACIFIC ENTOMOLOGIST

Published by the
Pacific Coast Entomological Society
in co-operation with
The California Academy of Sciences

CONTENTS

PATE, THREE NEW OXYBELUS FROM SOUTHERN CALIFORNIA 121
ROSS, NEARCTIC SAWFLIES OF THE GENUS RHOGOGASTER 129
LANGE, ALTERNATE HOST FOR THECABIUS POPULI-MONILIS 133
WOLCOTT, THE NORTH AMERICAN SPECIES OF ORTHOPLEURA 134
USINGER, A TAXONOMIC NOTE ON ARADUS DEPICTUS 138
COOLEY & KOHLS, IXODES CALIFORNICUS BANKS, IXODES PACIFICUS N. SP., AND IXODES CONEPATI N. SP. 139
ESSIG—SUMAC-GALL APHID IN ARIZONA 147
JAMES, THE GENUS CULICOIDES IN NORTHERN COLORADO 148
CHANDLER, A NEW GENUS OR HALIPLIDAE FROM CALIFORNIA 154
COCKERELL, NOMENCLATURE 158
LINSLEY, HABITS OF MELECTA SIERRAE 160
TITLE PAGE, TABLE OF CONTENTS AND INDEX FOR VOLUME XIX.

San Francisco, California

1943

THE PAN-PACIFIC ENTOMOLOGIST

EDITORIAL BOARD

E. C. Van Dyke
Associate Editor

E. G. Linsley
Editor

R. C. Miller
Treasurer

R. L. Usinger*

G. F. Ferris

E. S. Ross*

* *On military leave*

Published quarterly in January, April, July, and October with Society Proceedings appearing in the January number. Papers on the systematic and biological phases of entomology are favored, including articles up to ten printed pages on insect taxonomy, morphology, life history, and distribution.

Manuscripts for publication, proof, and all editorial matters should be addressed to the editor, E. G. Linsley, 112 Agriculture Hall, University of California, Berkeley, California. All communications regarding non-receipt of numbers, changes of address, requests for sample copies, and all financial communications should be addressed to the treasurer, R. C. Miller, at the California Academy of Sciences, San Francisco, California.

At least twenty-five "author's extras" will be supplied free of charge. Additional copies will be *reprinted* at cost of publication, if a request is received when proof is returned.

Domestic and foreign subscriptions $2.50 per year in advance. Price for single copies 75 cents. Make checks payable to "Pan-Pacific Entomologist."

INSECT BOXES

Standard size black insect box with sides of box and cover made of 1/4" redwood. The top, bottom and shoulders are of heavy cardboard.
Inside dimensions:
12¼x8¼x2⅛ inches.

Prices:
60 cents each.
Lots of one dozen, 50 cents each.

With Masonite bottom, 15 cents extra.
With glass top, 50 cents extra.

Prices for larger quantities on request.

Unit boxes also manufactured
Prices on application

RAISIN AND THIEBAUT BROS., LTD.

346 First Street, San Francisco, Calif.

Entered as second class matter, February 10, 1925, at the postoffice at San Francisco, California, under Act of August 24, 1912.

The Pan-Pacific Entomologist

VOL. XIX, No. 4 OCTOBER, 1943

THREE NEW OXYBELUS FROM SOUTHERN CALIFORNIA

(Hymenoptera, Sphecidae)

BY V. S. L. PATE

Cornell University

The descriptions of the following three species of *Oxybelus* from southern California are presented here in order that they may be available in connection with other investigations.

Oxybelus cocopa[1] Pate, new species

The superficial habitus of *cocopa* is very similar to that of the following Mojave Desert form *pitanta*, from which, however, it may be readily distinguished by the yellow clypeus and antennae, the heavy silvery vestiture, the non-foveolate mesonotal-scutellar suture, the straight non-fornicate femoral keel, the rounded squamal lobe, the obsolescent lateral propodeal carinae, and the different conformation of the clypeal lobe.

Type. ♂; In desert on Thompson Ranch, IMPERIAL COUNTY, CALIFORNIA. June 4, 1911. (J. C. Bridwell; visiting flowers of *Pilostyles Thurberi.*) [United States National Museum.]

Male. 4 mm. long. Black; the following citrinous: palpi, mandibles except red apices, clypeus, antennae, pronotum dorsally to and including tubercles, tegulae and axillary sclerites, scutellum anteriorly, postscutellum, fore and middle femora beneath, hind femora apically, all tibiae and tarsi entirely, and first five abdominal tergites with a narrow linear preapical fascia. Fulvous: femora exclusive of yellow maculation, and last abdominal segment. First two abdominal segments ferruginous. Squamae and mucro pellucid subhyaline. Wings clear hyaline, irridescent; veins and stigma light fulvous.

Head fulgid; suborbicular in anterior aspect; clypeus and front with dense appressed, silvery sericeous pile; vertex with similar decumbent pubescence; temples with a thinner but similar vestiture. Front gently convex except for flattened area below behind scapes, with fine close puncturation, width at distal end of scapes one-half the vertical eye length; vertex with puncturation somewhat coarser and more separated than that of front; ocelli in a very low triangle, the ocellocular line one-fourth the postocular

[1] After the Cocopa, a tribe of the Yuman Indians.

distance; temples vertically striatopunctate; temporal carinae absent but occipital carina rather well developed and slightly flanged. Antenna with scapes obterete, three-tenths the vertical eye length; pedicel obterete, one and a third as long as first flagellar article; flagellum short, thick, finely puberulent, first segment one and a half the length of second, ultimate article terete, twice the length of penult segment; interantennal distance five-sixths the antenocular line. Clypeus with median length one-fifth the vertical eye length; flat laterally to gently tumid discally; median lobe gently rounded out, the apex with a depressed, glabrous, nitidous flange which is obscurely quinquecrenulate marginally. Mandibles falcate; inner margins with a low obtuse dentiform angle on basal third.

Thorax with a vestiture of appressed, glistening silvery pubescence throughout. Pronotum very short, transverse, linear; dorsal face sharply carinate anteriorly to and including tubercles; lateral angles obtuse. Mesonotum gently arched, with rather close, coarse punctures; posterior margin foveate; axillae immarginate laterally; scutellum transversely subsemicircular, gently tumid, with scattered coarse punctures, bisecting carinule weak to obsolescent, lateral margins with wide pellucid flanges; postscutellum transversely sublunate, one-half length of scutellum, rugose, bisected by a carinule; squamae subequal in length to scutellum, transverse-obliquely carinulate, apices acute, inner (posterior) margins with a small rounded convex lobe which does not extend as far caudad as apices. Mucro subequal in length to scutellum, concave above, width at base one-third the length, divergent gradually to apex, the width of which is one-half the length, and with a broad shallow V-shaped excision there, the latero-apical teeth rounded. Mesopleura with coarse punctures obscured by heavy vestiture; prepectus margined anteriorly; episternal suture weakly impressed and foveolate; hypersternauli and sternostirae not evident; metapleura glabrous, horizontally costulate. Propodeum fulgid, with rather close coarse punctures throughout; dorsal face with appressed silvery sericeous pile, otherwise glabrous; posterior face with discal areole strongly margined, broadly cuneate, concave and nitidous within, closed by an acute angle above, long-stalked ventrally, lateral surfaces coarsely striatopunctate; lateral carinae well developed along dorsal face but weak to obsolescent along posterior face and simple not forked below; lateral faces horizontally striatopunctate.

Legs: fore metatarsi with four slender, elongate spines. Middle and hind tibiae with several rows of slender, elongate, testaceous spines on outer faces; the latter also weakly serrate there; longer hind tibial calcar three-fourths the length of hind metatarsi. Hind femora with a short, weak, straight keel above at apex.

Abdomen with a thin vestiture of decumbent silvery pubescence; constricted between segments, the first five with pellucid,

testaceous flanges apically. Tergites with rather coarse close puncturation throughout; chromatorachides moderately developed on first six and with their caudal margins weakly serrate; third to sixth inclusive with long slender latero-apical spines; penult tergite without evident dorsolateral carinules. Pygidium elongate subrectangular, width at base one-half the length, tapering to truncate apex, the width of which is one-third the length, the disc coarsely punctate. Sternites perfulgid; more sparsely punctate than tergites; each with a transverse submedian welt; hypopygium emarginate at apex.

Female. Unknown.

Paratype. A topotypic male specimen, bearing the same data as the type, agrees with the latter in all structural details but has the scutellum entirely yellow and only the first abdominal segment fasciate.

Oxybelus pitanta[2] Pate, new species

The present Mojave Desert form is closely related to *abdominale* from which it may be distinguished by the markedly different conformation of the clypeus, the absence of temporal carinae, the narrow subhastate discal areole of the posterior propodeal face, the truncate inner squamal lobes, and the narrower mucro.

Type. ♂; Cronise, SAN BERNARDINO COUNTY, CALIFORNIA. July 9, 1938. (P. H. Timberlake; on *Chilopsis linearis* [Desert Willow].)

Male. 5 mm. long. Black; the following stramineous: mandibles except red apices, pronotal tubercles, fore and middle tibiae with a narrow stripe on outer faces, hind tibiae basally at knees, and first four abdominal tergites with a very narrow preapical fascia briefly interrupted medially. Fulvous: antennae entirely, trophi. Badeous: apex of clypeal lobe, legs distad of trochanters (hind tibiae brunnescent on outer faces), tegulae and axillary sclerites; pronotum dorsally between lateral angles obscurely sordid badeous. Ferruginous: first two and last two abdominal segments. Pellucid dilute testaceous: squamae, mucro, and apical flanges of first few abdominal tergites. Tibial calcaria testaceous. Middle and hind tarsi brunnescent. Wings clear hyaline, iridescent; veins and stigma dark badeous.

Head suborbicular in anterior aspect; clypeus and front with a moderately heavy vestiture of appressed silvery sericeous pile;

[2] Pitanta: The Chemehuevi name for the Serrano Indians who lived north of the San Bernardino Mountains, in the Mojave Desert.

vertex and temples with a similar but thinner pubescence, that of vertex suberect. Front with moderately coarse, subcontiguous setigerous punctures throughout; width at distal end of scapes five-ninths the vertical eye length; flat below to weakly and angularly tumid above in lateral aspect; bisected by an impression running ventrad from median ocellus. Vertex fulgid, with punctures somewhat coarser and more separated anteriorly than on front, becoming rather coarsely striatopunctate posteriorly; ocelli in a curved line, the ocellocular line one-fourth the postocellar distance; temples with vertical striatopuncturation; temporal carinae weak to absent; post-temporal region sparsely punctured above, subnitidous below; occiptal carina strong, nitidous behind and below this. Antennal scapes obterete, one-third the vertical eye length; pedicel obterete, subequal in length to first flagellar article; flagellum simple, finely puberulent, second segment three-fourths length of first, last article simple, terete, twice length of penult segment; interantennal line seven-eighths the antennocular distance. Clypeus with median lobe one-third the vertical eye length; finely punctate throughout; flat laterally to gently tumid discally, medially with a low elongate subnitidous tubercle; median lobe with width subequal to median clypeal length, apically with a sunken, concave glabrous, nitidous bevel, the dorsal edge not completely margined but medially and laterally with a marginate dentoid angle, apical margin gently rounded out, bluntly angular medially, laterad of lobe with a small, inconspicuous tooth on each side. Mandibles slender, falcate; inner margins with a low obtuse dentoid angulation on basal third.

Thorax more or less fulgid; dorsum and pleura with a moderate vestiture of appressed silvery pubescence, and with moderately coarse, close punctures throughout. Pronotum short, transverse; flat dorsally, anteriorly with a high, erect, arched, laminate carina, notched medially, mucronate at lateral angles, from which descends a vertical carinule, and continuous onto tubercles. Mesonotum simple; mesonotal-scutellar suture impressed, foveolate; scutellum transversely subrectangular, gently tumid, coarsely punctate, bisected by a low carinule, lateral margins with broad pellucid flanges; postscutellum one-half length of scutellum; squamae large, broad, flat, subequal in length to scutellum, transversely-obliquely carinulate, apex subacute, inner (posterior) margins with a lobe subtruncate just before apex. Mucro subequal in length to scutellum; flaring from base (width there one-third the length) to apex (width there two-thirds the length) which is roundly excised, the lateroapical angles broadly rounded; concave above, with no trace of carinules or rugulae within. Mesopleura with prepectus sharply margined anteriorly; episternal suture impressed, foveolate; hypersternauli moderately impressed; sternostirae trisinuate, moderately developed, running obliquely forward and beneath to the sharply margined anterior edge of mesosternum; metapleura glab-

rous, fulgid, with parallel, horizontal costulae. Propodeum fulgid; dorsal face with a very thin vestiture of short suberect light hair, otherwise glabrous; with moderate puncturation throughout; dorsal face traversed on each side by oblique, subparallel, somewhat irregular rugulae; posterior face on disc with a large, deep, sharply margined, narrow subobhastate areole, trigonally acute and closed above, glabrous, nitidous, perfulgid within, long-stalked ventrally, laterad of which surface is traversed by horizontal, subparallel, somewhat irregular rugulae; lateral carinae well developed for entire length, erect and sublaminate dorsally, and simple but with a faint indication of a fork ventrally below; lateral faces with arcuate subparallel rugulae.

Legs: fore metatarsi simple, with four small spinules. Middle and hind tibiae with several rows of long testaceous spines on outer faces; longer hind tibial calcar slender, acuminate, seven-eighths the length of hind metatarsi; hind femora with a fornicate keel above at apex.

Abdomen fulgid; moderately constricted between the segments; with a thin vestiture of short decumbent hair, the tergites somewhat silvery fasciate caudally. Tergites with moderately coarse puncturation throughout; first bisected by a weak impression; first three with chromatorachides, that of third weak, of first two moderately well developed and weakly serrate caudally; third to sixth inclusive with large strong latero-apical spines; penult without evident dorsolateral carinules apically; pygidium subrectangular, slightly longer than wide at base, tapering to apex, the width there one-half the basal width, disc coarsely punctate, apex subtruncate. Sternites subfulgid, more sparsely punctate than tergites, second to sixth with a transverse preapical welt.

Female. Unknown.

Paratypes. Two topotypical males, bearing the same data as the type except that one was taken at flowers of *Asclepias erosa*, agree with the type in all essential features of livery and structural detail.

Oxybelus puente[3] Pate, new species

The weakly margined, edentate upper edge of the clypeal bevel, the subtrigonal discal areole of the posterior propodeal face, and the more weakly angulate front differentiate *puente* from its nearest relative *fossor* Rohwer and Cockerell, of which *umbrosus* Mickel is the male.

Type. ♂; RIVERSIDE, CALIFORNIA. July 9, 1933. (P. H. Timberlake; taken in copula, flying over sand.)

[3] After the Puente Hills between Whittier and Riverside, California.

Male. 5 mm. long. Black; the following deep stramineous: mandibles except red apices, scape anteriorly and annulate at base and apex, pedicel, pronotum dorsally to and including tubercles, scutellum with a small spot at each anterior lateral corner, inner margins of squamae, fore femora apically and beneath, middle and hind femora narrowly annulate at apex, all tibiae on outer faces, fore tarsi entirely, middle and hind metatarsi, axillary sclerites, and first abdominal tergite with a narrow transverse preapical line on each side. Abdomen bright ferruginous. Apex of clypeal lobe castaneous. Flagellum with first few segment brunneous, becoming bright fulvous apically. Middle and hind tarsi beyond first segment sordid fulvous. Pellucid dilute testaceous: tegulae, squamae, apical two-thirds of mucro. Wings clear hyaline, irridescent; veins and stigma badeous.

Head suborbicular in anterior aspect; clypeus and front with a moderate vestiture of appressed silvery pile; vertex and temples with similar but thinner pubescence, that of vertex suberect. Front with rather coarse, subcontiguous punctures throughout except below behind antennal scapes; width at distal end of scapes two-thirds the vertical eye length; flatly concave below behind scapes to transversely subangularly tumid a little above them, bisected by a fine impression running ventrad from median ocellus. Vertex fulgid, anteriorly with punctures somewhat coarser than front, becoming punctatostriate posteriorly; ocelli in a very low broad triangle, inner margins of hind ocelli with a glabrous, nitidous, subtuberculate welt, ocellocular line one-fourth the postocellar distance; temples vertically striatopunctate; temporal carinae entirely absent. Antennal scapes obterete, one-third the vertical eye length; pedicel obterete, four-thirds the length of first flagellar article; flagellum finely puberulent, inconspicuously incrassate distad, first two segments subequal in length, last article simple, terete, twice the length of penult segment; interantennal line seven-tenths the antennocular distance. Clypeus with median length one-fourth the vertical eye length; flat laterally to tumid discally, bisected by a weak arched keel; median lobe with apical width five-thirds the median clypeal length, apically with a narrow, transverse, linear, concave, glabrous nitidous bevel, submarginate above, apical margin shallowly bisinuate, weakly angulate medially and sharply so laterally and in addition with a rounded emargination laterad of which is a strong mucronate tooth. Mandibles falcate; inner margins at basal third with a weak obtuse dentiform angle.

Thorax fulgid; dorsum with a rather sparse clothing of declivous aeneous hair; pleura with a more noticeable vestiture of appressed silvery pubescence. Pronotum short; dorsal face flat, anteriorly with a moderate, cristate carina distinctly interrupted at lateral angles. Mesonotum perfulgid, with large close punctures, disc wtih a broad shallow longitudinal concavity, coarsely

foveolate posteriorly; scutellum transversely subrectangular, flatly tumid, coarsely punctate, bisected by a low carinule, lateral margins with pellucid laminate flanges; postscutellum transversely rugose, three-sevenths (.43) the length of scutellum; squamae large, subequal in length to scutellum, transversely carinulate, apices acute, inner (posterior) margins with a lobe subtruncate a little before apices. Mucro one and four-tenths the length of scutellum; flaring from base (width one-third the length of mucro) to apex (width two-thirds length of mucro) which is deeply excised (depth of excision one-fourth the length of mucro), the latero-apical angles rounded, concave above and crossed one-fourth way from base by a transverse carina. Mesopleura with moderately coarse, close punctures throughout; prepectus sharply margined anteriorly; episternal suture impressed, foveolate; hypersternauli weak; sternostirae moderate, bisinuate, running obliquely forward and beneath to the sharply margined anterior edge of mesosternum. Metapleura glabrous, perfulgid, with parallel, horizontal costulae. Propodeum perfulgid; with a very thin and inconspicuous vestiture of puberulent hair; dorsal face traversed laterally by oblique, subparallel, somewhat irregular rugulae between which surface is finely punctate; posterior face discally with a sharply marginate, deep concave, narrow subcampanulate areole which is closed and finely, irregularly areolate above, glabrous, nitidous within, long-stalked ventrally, laterad of which surface is traversed by subhorizontal, subparallel, irregular rugulae between which surface is finely punctate; lateral carinae strong throughout, sublaminate above, widely and strongly forked ventrally below; lateral faces traversed by subparallel, somewhat irregular fine rugulae.

Legs: fore metatarsi with three short stiff spines. Middle and hind tibiae with several rows of declinate testaceous spines on outer faces; longer hind tibial calcar slender, acuminate, about three-fourths (.76) the length of hind metatarsi; hind femora with a short, sharp, subfornicate keel above at apex.

Abdomen fulgid; very slightly constricted between segments; with a very thin vestiture of short decumbent silvery hair. Tergites with moderately coarse, separated punctures throughout; first bisected by a moderate impression; first two with moderate, welt-like chromatorachides; fourth to six inclusive with large strong latero-apical spines; penult without dorsolateral carinules apically; pygidium subquadrate, slightly broader than long, tapering slightly from base to apex where the width is subequal to the length, disc very coarsely punctate, apex subtruncate. Sternites more finely punctate and more heavily pubescent than tergites; second to fourth with a transverse pre-apical welt; sixth and seventh with caudal margins deeply angularly excised.

Allotype. ♀; Topotypical. Same data as type.

Female. 5 mm. long. Agrees wtih the male (type) except in the following features:

Livery much the same but antennae largely light brunneous; abdominal dorsum bisected by a broad light fuscous streak.

Vestiture similar but clypeus, front, temples and mesopleura with heavy sericeous pile; pygidium with appressed ferruginous setulae.

Head with width of front at distal end of scapes eight-tenths the vertical eye length. Antennal scapes about four-tenths (.39) the vertical eye length; pedicel two and a half times length of first flagellar article which is two-thirds length of second; interantennal distance five-eighths the antennocular distance. Clypeus with median length about one-fourth (.242) the vertical eye length; flat laterally to very gently tumid discally, medially with an elongate, subcompressed tubercle; median lobe with apical width about twice the median clypeal length, apically with a narrow, transverse, deflexed, nitidous, glabrous bevel, immarginate above, apical margin bisinuate medially and thus obscurely tridentate, the lateroapical angles in addition with a large strong tooth.

Thorax in general the same as male.

Legs: fore metatarsi with five spines. Middle and hind tibiae strongly spinose on outer faces.

Abdomen perfulgid; with punctures more separated on tergites. Pygidium flat, trigonal, one and a fifth times as long as broad at base, apex broadly rounded, disc with coarse, close, setigerous punctures.

Paratypes. CALIFORNIA: RIVERSIDE: July 9, 1933; (P. H. Timberlake; flying over sand): 2 ♂, 2♀; May 25, 1928; (P. H. Timberlake; on *Erigonum fasciculatum* [California Buckwheat]): 2 ♂; August 29, 1926; (P. H. Timberlake; on *Polygonum lapathifolium*, 1 ♂; September 20-24, 1931; (P. H. Timberlake; on *Baccharis viminea* [Mulefat]: 2 ♂; September 30, 1934; (P. H. Timberlake; on *Baccharis emoryi* [Waterwillow]): 2 ♂; October 9, 1929; (P. H. Timberlake; on *Eriogonum gracile*): 1♀. WHITTIER, LOS ANGELES COUNTY; August 11, 1920; (P. H. Timberlake; on *Foeniculum vulgare* [Fennel]): 3♂. CLAREMONT, LOS ANGELES COUNTY; (C. F. Baker): 1 ♂, 1♀. CUSHENBURY SPRINGS, SAN BERNARDINO COUNTY; September 1, 1936; (P. H. Timberlake; on *Lepidospartum squamatum* [Scale-Broom]): 1♂.

The paratypes agree with the typical pair in all essential details. The males taken at Riverside, September 20-24, 1931, are smaller, melanic specimens, as is also the male from Cushenbury Springs. A number have a distinct fuscous streak down the back of the abdomen.

THE NEARCTIC SAWFLIES OF THE GENUS RHOGOGASTER
(Hymenoptera)

BY HERBERT H. ROSS
Illinois Natural History Survey, Urbana, Illinois

In North America, the sawfly genus *Rhogogaster* Konow is primarily a western genus, being represented most abundantly in the Rocky Mountain region from British Columbia to California. The genus comprises a group of four medium sized species which are uniformly green with black markings on the dorsum and legs. Fifteen names have been proposed for the nearctic members of the genus; three of these belong to other genera and some of the remainder must be reduced to syonymy. Color patterns on head, pleurae, and abdomen vary considerably in shape and extent of the black areas, and are of only limited use for identification. Characters of the genitalia, especially the saws, have reliable identification characters.

Our species fall into two natural groups: one, with flat head and shorter eyes, includes *lateraria* (Cresson) and *addenda* (Cresson); the other, with slightly rounder head and longer eyes, includes *californica* (Norton) and the holarctic *viridis* (Linnaeus). The generic synonymy and definition has been given by Ross (1937:104)*.

KEY TO NEARCTIC SPECIES

1. Apical sternite cleft with a sheath, fig. 6, females 2
   Apical sternite not divided along meson, males 5
2. Pectus green or straw-color 3
   Pectus black 4
3. Lancet with ventral lobes close together, spurette in a depression and not projecting above it, fig. 9 ..... *californica*
   Lancet with ventral lobes further apart, spurette projecting above level of depression, fig. 8 ..... *viridis*
4. Lancet with spurettes arising from depression at base of ventral lobes, fig. 10; abdominal tergites with dorsal area black, latero-ventral portion almost entirely green ..... *addenda*
   Lancet with spurettes arising from ventral lobe above depression, fig. 11; abdominal tergites more banded in appearance, the dorsal black area of each tergite continuing as a band down the latero-ventral portion ..... *lateraria*
5. Costa and stigma entirely green or whitish 6
   Costa and apex of stigma dark brown or black 7

* Illinois Biological Monographs 15:1-173; 1937.

6. Head of penis valves more or less rectangular, fig. 2..*californica*
   Head of penis valves hatchet-shaped, fig. 1.....*viridis*
7. Mesopleurae and pectus separated by a broad black stripe which extends to, or almost to, the posterior margin of the pectus; praeputial processes no longer than width at apex, fig. 4 .....*lateraria*
   Mesopleurae and pectus without a separating dark band or this band irregular and extending only midway across sclerite; praeputial processes longer than width at apex, fig. 5....*addenda*

Rhogogaster viridis (Linnaeus)

Tenthredo viridis Linnaeus, Systema Naturae, 10th ed.: 557, 1758.
Rhogogaster ruga MacGillivray, Can. Ent. 60:160; 1923. ♀. *New synonymy.*
Rhogogaster respectus MacGillivray, N. Y. Ent. Soc. Jour. 31:165; 1923. ♂. *New synonymy.*

This species has the habitus of some species of *Tenthredo*, being robust, about 10 mm. long, bright green in life with black markings on dorsum of head and thorax, and with the dorsum of the abdomen black. The sheath, fig. 6, is round at apex compared to the more pointed sheath of *californica*, figs. 7A and B; this difference, however, is not sufficiently marked to be useful for diagnosis. The male frequently has the black on the abdomen reduced to narrow, transverse bars.

The species occurs throughout the Rocky Mountain region from Alaska to California, but apparently extends east only as far as Manitoba; it is recorded from many localities in northern Europe and Asia. Available data indicate a flight range from mid-May to mid-July.

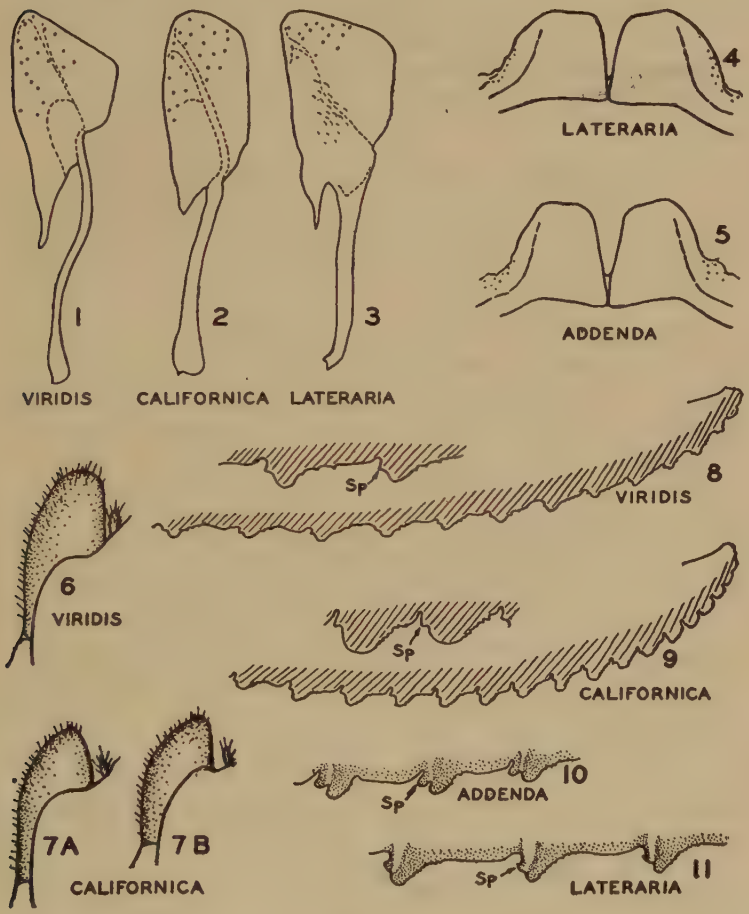
Distribution Records.—Alaska: Eagle, Katmai, Skagway. Alberta: Edmonton, Fawcett, Gull Lake, High Prairie, Wabamum, Waterton, Wetaskewin. British Columbia: Great Divide. California: Carville, Lassen National Park, Meadow Valley, Nash Mine. Manitoba: Birtle, Husavick. Montana: Lake McDonald, Glacier National Park. Yukon: Hootalinqua.

Rhogogaster californica (Norton)

Tenthredo californicus Norton, Ent. Soc. Phil. Proc. 1:198; 1862. ♀.
Tenthredopsis evansii Harrington, Can. Ent. 21:98; 1889. ♀. *New synonymy.*
Tenthredo ripula MacGillivray, N. Y. Ent. Soc. Jour. 31:109; 1923. ♂. *New synonymy.*

This resembles *viridis* in external characteristics but is dis-

tinguished in both sexes by differences in genitalia. Its distribution embraces not only the western portion of North America but also a band across the northern part of the continent extending



Explanation of Figures

Parts of *Rhogogaster*, Figs. 1-3, penis valves. Figs. 4-5, praeputial lobes. Figs. 6-7, sheaths. Figs. 8-11, ventral margin of saws. sp—spurette.

to the Atlantic coast. It has essentially the same seasonal timing as *viridis*, from May to mid-July.

Distribution Records.—Alberta: Banff, Beaver Lodge, Fawcett, Gull Lake, Rodner, Waterton. California: Hopland, Lake

Tahoe, Lassen, Modoc County, Plumas County, Sequoia National Park, Sonoma County, Trinity County, Truckee, Tulare County, Yosemite Valley. COLORADO: Longs Peak Inn. IDAHO: Worley. MANITOBA: Aweme, Birtle. MICHIGAN: Douglas Lake. MONTANA: Drummond, Florence, Gallatin County. NEW YORK: Karner. ONTARIO: Sudbury. OREGON: Corvallis, Eagle Ridge. UTAH: LaSal Mountains. WASHINGTON: North Yakima. YUKON: Whitehorse.

RHOGOGASTER LATERARIA (CRESSON)

Tenthredo lateraria Cresson, Amer. Ent. Soc. Trans. 8:23; 1880. ♀.
Tenthredo retosta MacGillivray, N. Y. Ent. Soc. Jour. 31:109; 1923. ♂. *New synonymy.*

This species is smaller and with much more solid and extensive black areas than the preceding two, the abdomen appearing banded. The head is markedly flattened dorsad and wider than high. The species is restricted to the Rocky Mountain region and has not been taken north of Salmon Arm, B. C. It is a spring form, first collection date being March 21, at Corte Madero Creek, California, latest being July 22, at an elevation of 6,000 feet in the Blue Mountains in Oregon.

Distribution Records.—ALBERTA: Waterton. BRITISH COLUMBIA: Okanagan Falls, Salmon Arm, Vernon. CALIFORNIA: Corte Madero Creek, Lake Tahoe, Muir Woods, South Anselmo. IDAHO: Juliaetta, Moscow, Worley. OREGON: Corvallis, Eagle Ridge, Wallowa Lake. WASHINGTON: Wawawai.

RHOGOGASTER ADDENDA (CRESSON)

Tenthredo addenda Cresson, Amer. Ent. Soc. Trans. 8:23; 1880. ♀.
Tenthredo vittatipes Cresson, Amer. Ent. Soc. Trans. 8:24; 1880. ♂. *New synonymy.*
Rhogogaster truncatus Rohwer, U. S. Nat. Mus. Proc. 43:211; 1912. ♀. *New synonymy.*
Rhogogaster pitohatus Rohwer, U. S. Nat. Mus. Proc. 43:211; 1912. ♀. *New synonymy.*

Slightly smaller than *lateraria* but almost identical with it in color and general structure. The females are readily distinguished by saw characters; the males are very similar and frequently difficult to differentiate except by characters mentioned in the key. The species range is very similar to that of *lateraria* but records indicate a seasonal timing two or three weeks later.

Distribution Records.—BRITISH COLUMBIA: Agassiz, Cultus Lake, Nanaimo. CALIFORNIA: Alameda, Cisco, Fallen Leaf Lake, Giant Forest, Gold Lake, Lake Tahoe, Martinez, Nash Mine, Santa Cruz Mountains. COLORADO: Manitou. IDAHO: Juliaetta, Mt. Moscow. MONTANA: Bonner. NEVADA: Reno. OREGON: Corvallis, Mt. Hood. WASHINGTON: Blue Mountains, Dayton, Easton, Elhi Hill, Garden, Olympia, Spokane, Wawawai.

SPECIES TRANSFERRED TO OTHER GENERA

Rhogogaster sayi Rohwer=*Macrophya rapae* (L.) *New synonymy.*
Rhogogaster reliqua MacGillivray = *Tenthredo olivacea* L. *New synonymy.*
Rhogogaster respersus MacGillivray = *Tenthredo olivacea* L. *New synonymy.*

AN ALTERNATE HOST RECORD FOR THE APHID, THECABIUS POPULI-MONILIS (RILEY)

On October 25, 1942, along the banks of the Arroyo Seco River in Monterey County, California, the author found apterous forms of *Thecabius populi-monilis* (Riley) on the roots of willow (*Salix* sp.).

This aphid forms bead-like pseudogalls on the upper side of the leaves of *Populus* spp. in central and southern California, and as far as the author is aware, there are no records of the migration of this aphid to the roots of any plant.

On May 12, 1942, at Gonzales, which is not far from the Arroyo Seco locality, first to third instar aphids of this species were found in bead-like galls on cottonwood. The galls persisted, and by August no living aphids in the galls were found.

At Arroyo Seco, the apterous aphids were exposed on the small, fibrous roots by turning over rocks just above water line. They were covered by a white, waxy material. This aphid preferred a habitat where leaves collected under the rocks; this apparently afforded them more protection.

Some of the aphids had wing pads, and winged forms emerged in the laboratory and were later determined as this species by Professor E. O. Essig of the University of California.—W. H. LANGE, JR.

NOTES ON THE NORTH AMERICAN SPECIES OF *ORTHOPLEURA* SPIN.

(Coleoptera, Cleridae)

BY A. B. WOLCOTT

Downers Grove, Illinois

The writer trusts that the following notes and key may prove to be of some aid to students of our beetle fauna. The occurrence of a supposedly new species enables the author to include its description. All the known species with the exception of three (*O. purpurea* Gohr., *O. ichnoides* Chevr., and *O. suturalis* Chevr.,) are before the writer at this time. The characters used in the key for these three species are derived from their original descriptions.

The presence of a more or less distinct, post-median elytral pale fleck is a matter of no moment, as it may, or may not occur in individuals of the same species. The punctation of the elytra is rarely of any importance as a diagnostic character due to the fact that it is so nearly identical in the different species, that it could better be considered as of generic value, hence these features are given but little consideration in the following accounts.

Orthopleura cyanipennis Chapin

Orthopleura cyanipennis Chapin, Proc. Ent. Soc., Wash., 22:52. 1920.

A paratype of this fine and beautiful Mexican species is strikingly similar in size, color and form to *Tenerus higonius* Lewis, a Formosan insect, but the resemblance, remarkable as it is, is merely superficial. *Cyanipennis* is a slender species with head, prothorax and legs bright red, the elytra steel blue. Length (in specimen at hand) 7.6 mm.

Orthopleura hintoni Wolcott, new species

Allied to *O. cyanipennis* Chapin, but more robust. Head, prothorax, base of antennae, body beneath and legs red. Head rather coarsely punctured, the occiput finely but distinctly rugulose. Antennae with scape and next two or three segments red, the balance of the segments of the funicle light piceous, shining, clava dark piceous. Sides of prothorax straight, pronotum quadrate, rather coarsely punctured, sides densely punctured, all punctures well separated, at middle of base a large smooth tubercle prolonged

anteriorly as a smooth, feeble costa to beyond the middle of the disk, the tubercle and costa with a few rather coarse, scattered punctures. Head and thorax rather densely clothed with long reddish hairs. Elytra blue, basal three-fifths rather coarsely and moderately densely punctured, basal portion scabrous in small areas, in other small places there is a tendency for the punctures to become seriate; apical two-fifths finely and densely punctured, these fine punctures also intermixed with the coarse punctures of basal portion. Pubescence erect, moderately dense and fine, black. Scutellum obscurely red. Legs red, distinctly punctured and pubescent. Length, 9.6 mm.

Holotype, a female in the collection of the author, MAZATLAN, (West Coast) MEXICO, collected by Dr. H. E. Hinton, August 4, 1932, to whom this fine species is dedicated.

This species is so closely allied to *O. cyanipennis* Chapin, that it is only after long consideration that the writer has ventured to characterize it. The more robust form, the coarser puncturing and the presence of feeble costa are the characters depended upon for the recognition of this species.

ORTHOPLEURA QUADRATICOLLIS SPINOLA

Orthopleura quadraticollis Spinola, Mon. Clér. pl. XXXII, fig. 4, 1844.

In 1910 (Publ. Field Mus. Nat. Hist. Zoöl. Ser., Vol. VII, no. 10, p. 393), the writer called attention to this species and gave some descriptive notes drawn from the figure given by Spinola. Due to the fact that Spinola lost his descriptive notes he figured but did not describe this species and he failed to mention the locality or country from which his specimen was derived. However, the figure is very good, and should serve to identify the species. Sometime ago the writer received from Drs. H. E. Hinton and R. L. Usinger a fine male specimen of this species collected at Bejucos, Temescaltepec, Mexico, July 4, 1937. This specimen agrees in all respects with the cited figure by Spinola, and affords an opportunity to describe it in detail and thus make it better known.

General color deep rich red; form elongate, subcylindrical, rather robust; elytra moderately convex, conjointly rounded at apex, sutural angles obtusely rounded, dorsum subopaque. Head dark rufous becoming very dark (nearly black), on occiput; pubescence short, rather dense, yellow, darker on occiput. Antennae

with scape and funicle red, sparsely clothed with short flavous hairs, clava consisting of three enlarged segments, dark piceous, inner angles of the first and second segments of clava produced into flattened rami, which are obtusely rounded at their apices, three enlarged segments of clava together longer than two-thirds total length of antenna. Prothorax dark rich red, as broad as long, quadrate, sides parallel, pronotum dark rich rufous, clothed with long, dense golden yellow sericeous recumbent hairs, median longitudinal vitta extending from base to apical margin, nude, exposing the integumental ground color, wide at base, which has neither a tubercle nor a costa present, disk with fine, dense, feebly impressed punctures. Scutellum obscurely rufous. Elytra wider at base than prothorax, wider posteriorly, sides feebly, broadly rounded to apex, which is conjointly obtusely rounded, sutural angles obtusely rounded, color piceous, suture, lateral and apical margins narrowly yellowish-red, pubescence concolorous with the surface from which it arises, short, fine and rather sparse. Metasternum dark red, sparsely feebly punctured, at sides densely punctured. Abdomen shining, dark piceous, apical segment reddish, coarsely, sparsely and feebly punctate, sides with a few long yellow hairs. Legs red, rather densely coarsely punctured rather densely clothed with long hairs, tarsi of all legs fuscous, tibiae of middle fuscous, tibiae of front and hind legs fuscous at apex.

Length (in present specimen), 10 mm.

O. quadraticollis Chevr., and *O. lepida* Klug are the only members of the genus, as far as known to the writer, in which the suture and lateral margins are margined with a pale color. *O. lepida* is a small species (4.5 mm. long) of Cuba, and bears but little resemblance to Spinola's species. Chevrolat (Rev. Mag. Zoöl., 1874, p. 329) described under *O. damicornis* F. a supposed variety which he designated as "Var. D." from Cuba, it is identical with *lepida.*

In occasional specimens of *O. binotata* Gorham the elytra may be margined in a similar manner to *quadraticollis*, but may be readily distinguished by the maculations of the pronotum. *O. suturalis* Chevrolat, blue-black, with the suture and elytral apices broadly reddish has a dark pronotum. *O. cyanipennis* Chapin and *O. hintoni* Wolcott, are the only species in which the elytra are of a distinct blue color. *O. punctatissima* Chevr., and *O. texana* Bland, are closely allied species, in the former the antennae are black, piceous at base, head clothed with rather dense gray pubescence; the latter has the head clothed with short golden-yellow hairs, the antenna with the scape and funicle dark rufous with yellow hairs, clava black. *O. teneroides* Gorham has the sides of

the prothorax broadly, feebly rounded, the punctation of the very black elytra is much coarser than in any of the other known species. The pronotum with rather long, dense, sericeous golden yellow pilosity at each side middle of disk. *O. damicornis* Fab., has the head black, clothed with black hairs, the pronotum red with the sides and base narrowly margined with black, and the elytra feebly shining.

These notes and the key which follows should facilitate identification of the several species.

KEY TO THE AMERICAN SPECIES OF ORTHOPLEURA SPINOLA

1. Pubescence of pronotum evenly distributed 2
   Pubescence of pronotum so distributed as to form vittae 3
2. Pronotum dark piceous 4
   Pronotum wholly or in part red 5
5. Elytra wholly red 6
   Elytra distinctly blue 7
   Elytra black or blue-black 8
   Elytra piceous 9
4. Elytra with suture broadly and apex, pitchy red ..... *suturalis* Chevr.
   Elytra uniformly piceous ..... *guadeloupensis* n. sp.
7. Pronotum with feeble tubercle and costa ..... *hintoni* n. sp.
   Pronotum with tubercle and costa wanting ..... *cyanipennis* Chpn.
8. Elytra blue-black, elytral margins pale yellowish-red ..... *lepida* Klug
   Elytra black, very coarsely punctured ..... *teneroides* Gorh.
   Elytra black, rather finely punctured ..... *damicornis* Fab.
9. Funicle red, head clothed with golden-yellow hairs ..... *texana* Bland.
   Funicle black, head clothed with gray hairs ..... *punctatissima* Chevr.
6. Thorax red, sides and three vittae, black ..... *purpurea* Gorh.
3. Thorax red, elytra piceous, suture and lateral margins yellow 10
10. Pronotum with a narrow nude median vitta dark red ..... *quadraticollis* Spin.
    Pronotum with distinct spots and vittae of integumented color 11
11. Pronotum with two large ovate dark spots at base ..... *binotata* Gorh.
    Pronotum with sides and two linear vittae, black ..... *ichnoides* Chevr.

Appendix

Orthopleura guadeloupensis Wolcott, new species

Piceous, thinly clothed with fine, short brown pubescence. Antennae with scape and following segment red, infuscate, balance of funicle dark piceous, clava finely clothed with short, gray pubescence, clava formed as in *O. quadraticollis* Spinola, but very pale piceous, nearly rufous, finely pubescent. Pronotum piceous, densely, sparsely and coarsely punctate. Elytra dark reddish piceous, punctured as usual in this genus, at apex densely clothed with flavo-cinereous pubesence. Abdomen rufous, densely rather coarsely punctate, the segments each with their posterior margins dark piceous, fifth segment elongate trapezoidal semi-circularly emarginate at apex, sixth ventral segment short, obtusely rounded at apex. Metasternum dark piceous, punctate. Legs piceous red, densely and rather coarsely punctured. Length, 5.7 mm.

Holotype, a male in the collection of the writer, GUADELOUPE. (Staudinger).

A Taxonomic Note on Aradus depictus Van Duzee

This species was synonymized with *concinnus* Bergroth by me (Ann. Ent. Soc. Amer. 29:495, 1936) because no mention was made of distinctive characters in the original description, the characters mentioned by Parshley (Trans. Amer. Ent. Soc. 47: 47-50, 1921) were variable in the series of specimens before me, and the ranges of the two forms overlapped. Dr. Parshley (*in litt.*) has since called my attention to constant structural differences in the antennae which serve to distinguish the two species.

In *concinnus* the antennae are relatively short and the second segment is slightly shorter than the interocular space and evenly narrowed to just before the base. In *depictus* the antennae are longer, the second segment being longer than the interocular space, rather evenly thickened on its apical two-thirds, and abruptly narrowed at basal third. The third segment is less than half as long as second in *concinnus* and more than half as long as second in *depictus*. In *concinnus* the second segment is usually annulate with white at middle and at apex whereas it is entirely brown in *depictus*. The scutellum is relatively broader in *concinnus*.—R. L. USINGER.

IXODES CALIFORNICUS BANKS, 1904, *IXODES PACIFICUS* N. SP., AND *IXODES CONEPATI* N. SP.

(Acarina: Ixodidae)*

BY R. A. COOLEY, *Senior Entomologist*, AND GLEN M. KOHLS, *Associate Entomologist, United States Public Health Service.*

IXODES CALIFORNICUS BANKS

This tick was described by Banks (1904, Proc. California Academy Sciences, 3d Ser., Zool., Vol. III, No. 13, p. 369, Plate XLI, Fig. 57) from "several specimens" found on a bird, "*Toxostoma crissalis*," at Claremont, California (Baker). The author apparently believed the specimens to be females for he states, "Length ♀ 4 mm."

Through the kindness of Dr. Joseph C. Baequaert we have had an opportunity to examine the type material from the Museum of Comparative Zoology, Harvard University. It was found that the lot contains 5 nymphs. Because of the absence of females, an attempt was made to locate further type material in the California Academy of Sciences, but without success. Through Dr. Bequeart we have learned that Mr. Banks now considers it very likely that he saw only nymphs when he described *californicus* and that all of the specimens were in fact nymphs. Banks' description and figures of the nymphs made in 1904 are entirely adequate for the recognition of the specimens. These nymphs are specifically different from those of the tick which has been generally accepted as *californicus*. They suggest *I. brunneus* Koch, 1844, the nymph of which has never been adequately described and figured. Whether *californicus* will eventually fall as a synonym of *brunneaus* can be determined only when nymphs of *brunneus* are available for study.

Banks in 1908 (A Revision of the Ixodoidea, or Ticks of the United States, Bureau of Entomology, Technical Series, No. 15, p. 24) redescribed *Ixodes californicus* Banks on the basis of a male and female from specimens taken in Claremont, Santa Clara County, Santa Cruz Mountains, and Redwood Creek, Humboldt County, all of California, and the hosts given are gray fox and black-tailed deer. His redescriptions and figures were ade-

* Contribution from the Rocky Mountain Laboratory (Hamilton, Montana) of the Division of Infectious Diseases of the National Institute of Health.

quate for the recognition of the common *Ixodes* of the Pacific Coast and the name *californicus* has since been erroneously used for this tick, which is now described as *Ixodes pacificus* n. sp.

Ixodes pacificus Cooley and Kohls, new species

Female

Body. Capitulum, scutum and legs brown-black. Unfed, body nearly elliptical. Scutum reaching about half the length. Postscutal areas with numerous long hairs. Lateral folds distinct, narrow. Length, from scapulae to posterior margin, 2.64 mm.; width, 1.14 mm. Fully fed specimens are a little wider and swollen behind and may reach 9.0 mm. in length.

Capitulum. Length, from posterior corners to tip of hypostome, 0.84 mm.; width of basis just posterior to the palpi, 0.45 mm. Basis with an even, convex curvature on top, lateral margins abrupt, converging posteriorly. Posterior margin a concave line, salient; cornua absent. Porose areas oval or sub-triangular, separated by less than the length of one. Surface smooth, shagreened, shining. Palpi long, bluntly rounded apically; lateral margins nearly straight, median margins curved. Article 2 longer than 3. Combined length of 2 and 3, 0.6 mm. Surface of palpi faintly shagreened, punctate and with a few hairs which are short except for two or three long ones near the base on the median side. In ventral view the basis is evenly curved, broadly rounded and salient behind; transverse sutural line visible. Auriculae mild as short ridges. Palpi flattened medially. Article one with the inner plate visible as a triangular point.

Hypostome. Long, rounded apically. Denticles 3/3 for most of the length but 4/4 in the distal portion; more visible in specimens mounted in balsam. Lateral denticles longest and pointed; median files with the denticles progressively smaller and rounded. Length about 0.54 mm.

Scutum. Slightly longer than wide, widest at about the middle. Posterior border broadly rounded. Scapulae pointed, moderate in length. Sizes from 1.26 mm. x 1.14 mm. to 1.44 mm. x 1.36 mm. Lateral carinae never distinct but traceable in some specimens. Cervical grooves usually visible only in reflected light as long, shallow depressions which are first convergent, then divergent and terminate before reaching the postero-lateral border. Surface shagreened throughout. Punctations fine and numerous. Hairs long and large, confined usually to longitudinal bands in the median and the lateral areas. Hairs on the scutum very similar to those on the postscutal area but usually a little longer.

Legs. Smooth and shagreened. Tarsi long, tapering, and with subapical humps very small on I, absent on all others. Ventral hairs on legs long and spinelike. Haller's organ on I distant from

the distal end. Length of tarsus I, 0.84 mm.; metatarsus, 0.50 mm. Length of tarsus IV, 0.82 mm.; metatarsus, 0.54 mm.

Coxae. Smooth, mildly convex, with very long hairs and with posterior edges salient. Internal spur on I long, tapering and pointed; absent on II, III and IV, but on II III there are salient corners. External spurs short on all coxae.

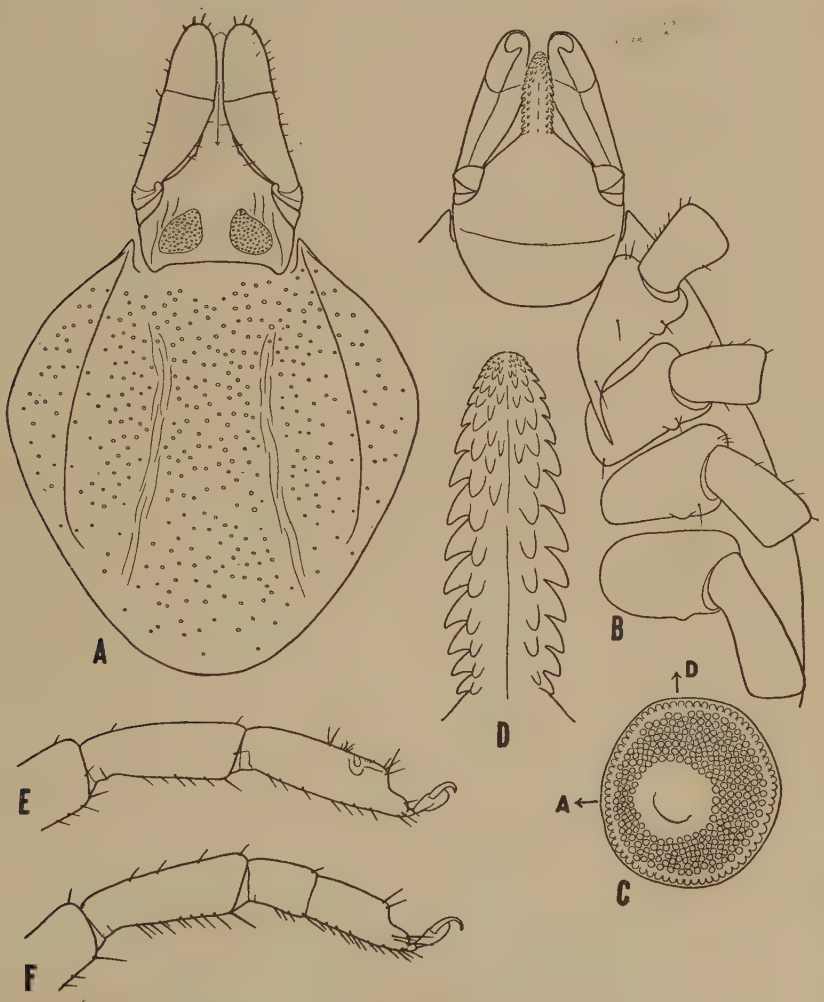
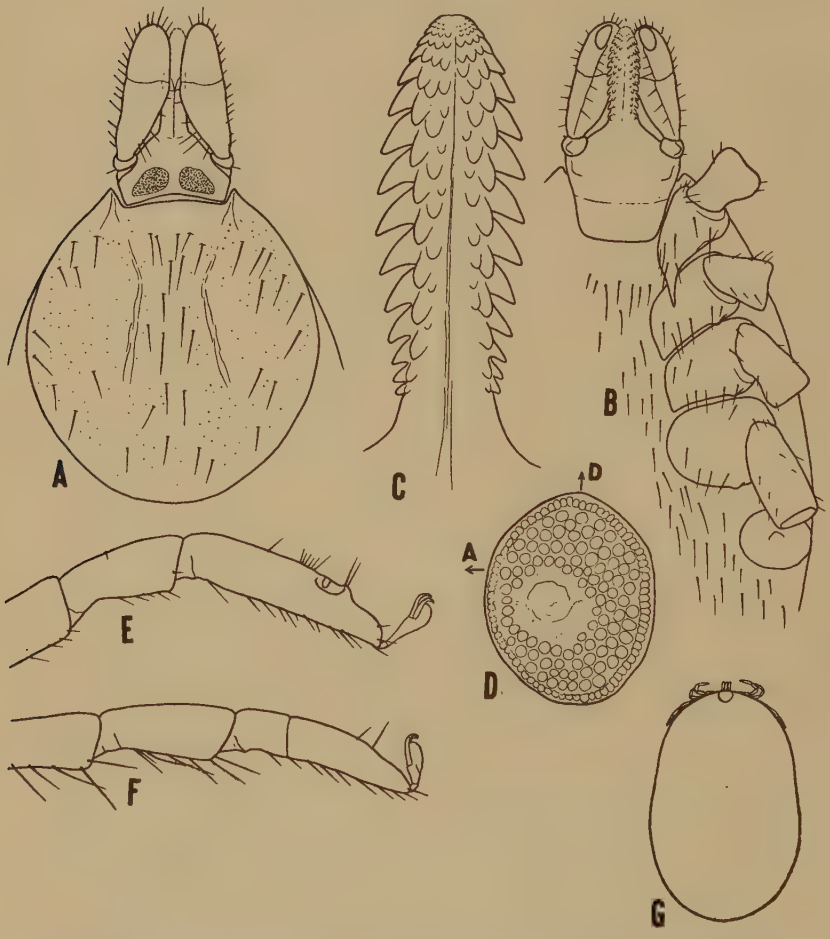


Figure 3. Female *Ixodes conepati* Cooley and Kohls. A Capitulum and scutum, dorsal. B. Capitulum and coxae, ventral. C. Spiracular plate. D. Hypostome. E. Tarsus and metatarsus of leg I. F. Tarsus and metatarsus of leg IV.

Spiracular plate. Suboval, with the longer axis transverse and with the nearly level surface well elevated over the body surface. Goblets moderate in number and size. Size about 0.3 mm. x 0.27 mm.

Sexual opening. Placed between coxae IV.



On page 142, replace the legend with the following:

Figure 1. Female *Ixodes pacificus* Cooley and Kohls. A. Capitulum and scutum, dorsal. B. Capitulum and coxae, ventral. C. Hypostome. D. Spiracular plate. E. Tarsus and metatarsus of leg I. F. Tarsus and metatarsus of leg IV. G. Shape, replete specimen.

Male

Body. Oval, a little wider behind. Length, from scapulae to posterior border, 2.19 mm.; width, 1.32 mm.

Capitulum. Basis flattened (mildly convex) edges salient at the sides and behind; lateral borders convergent behind. Cornua absent. Surface punctate. Palpi broad, rounded apically, and with article 2 depressed dorsally. Article 1 simple. Hairs short excepting about three on the median side of article 2. In ventral view the basis is short and with a salient point behind. Auriculae present as lateral ridges. Palpi flattened medially and with the ventral edge in line with a mild tooth on inner plate of article 1.

Scutum. Length 2.04 mm.; width, 1.02 mm. Surface about equally convex on both ends. Pseudoscutum usually not visible but if visible then broadly rounded behind. Scapulae long, bluntly pointed and round on top. Hairs numerous and long, similar to those on the lateral folds; each hair arising from a depression which directs the supine hair backward. Punctations numerous, fine. The surface in general faintly shagreened.

Hypostome. Large and with large lateral denticles, those near the base larger, directed posteriorly and well raised above the surface of hypostome. The small median denticles as diagonal crenulations. Length about 0.33 mm.

Ventral plates. Median plate three times as long as the anal plate. Pregenital plate not clearly defined. Punctations on all plates numerous and fine, shallow. Hairs on all plates fine and numerous.

Legs. Essentially as in the female but with metatarsus on leg I relatively much shorter.

Coxae. Essentially as in the female but the internal spur on coxa I is shorter.

Spiracular plate. Oval with the longer axis longitudinal. Macula a little ececntric on the antero-ventral side. Length, 0.268 mm.; width, 0.221 mm.

Sexual opening. At the level of coxae III.

Nymph

Capitulum. Basis broad with the posterior edge salient and nearly straight. Cornua definite, small, divergent, slightly elevated over the level of the posterior margin and often with the elevation extending forward. Surface impunctate, shagreened. Palpi long, laterally straight, medially curved. Article 1 simple in dorsal view. Hairs few. In ventral view basis is long, waisted at the middle, broadly rounded and salient behind. Auriculae as mild lateral extensions. Article 1 of the palpus with a faint ventral tooth.

Hypostome. Rounded apically. Denticles first 3/3 and then 2/2 with the lateral teeth pointed and larger, the medians rounded and progressively smaller to the median line. Length about 0.19 mm.

Scutum. Sub-circular, slightly wider than long. Scapulae short and rounded. Lateral carinae faint, nearly straight. Cervical grooves distinct, first convergent and then divergent, fading out before reaching the postero-lateral margins. Surface shagreened. Punctations few and small. Hairs few and small.

Legs. Essentially as in the male and female. Metatarsus on leg I about half as long as the tarsus.

Coxae. Essentially as in the male.

Spiracular plate. Sub-circular with the longer axis transverse. Porose central. Goblets few and scattered. Length, 0.134 mm., width, 0.115 mm.

Holotyype (female), *allotype* (male) and *paratypes* all from A. P. 8096, a lot of 5 females and 6 males collected from vegetation, MONTEREY COUNTY, CALIFORNIA, March 16, 1932. Also 8 paratype nymphs, A. P. 20022, from Vancouver, B. C., reared by Mr. J. D. Gregson.

Holotype and allotype, paratypes of adults and paratype nymphs are deposited in the collections of the Rocky Mountain Laboratory, Hamilton, Montana. Paratype adults and nymphs are placed in the United States National Museum, Washington, D. C.; Museum of Comparative Zoology, Harvard University, Cambridge, Mass.; Division of Entomology and Parasitology, University of California, Berkeley, California.

The nymphs of *pacificus* may be readily distinguished from those of *californicus* by several characters including their very small, ridge-like auriculae. In *californicus* they are large, triangular, and protrude laterally.

The adults of *pacificus* differ from those of *I. scapularis* Say, 1821, in several respects. The absence of cornua in the *pacificus* female and the much smaller spiracular plates in the male will serve to separate the two species. Furthermore, *pacificus* is known only from coastal regions of British Columbia and Western United States as far south as San Diego, California. It undoubtedly extends south into Lower California. *Scapularis*, however, is widely distributed in much of the Southeastern United States and it has also been reported from near Tampico, Mexico.

Ixodes conepati Cooley and Kohls, new species

Female

Described from holotype (unengorged) and one paratype (a little engorged).

Body. Color well sclerotized parts brown-black. Length (tips of scapulae to posterior extremity), 4.05 mm.; width, 2.25 mm. Oval, widest at about the middle. Color, yellow-brown. Scutum reaching about half the length. Postscutal area smooth, striate, and with numerous hairs which are similar to those on the marginal folds.

Capitulum. Length (cornua to tip of hypostome), 0.9 mm.; width of basis (dorsum back of palpi), 0.66 mm. Sides either curved or straight and slightly convergent behind. Cornua distinct, moderately rounded, and at about the same level as the salient posterior margin. Porose areas large, depressed and well separated. Surface smooth, shining, and faintly shagreened. Inner plate of palpal article 1 visible as a small button. Article 2 longer than 3; combined length, 0.95 mm.; greatest width, 0.21 mm. Laterally straight, medially curved; widest across article 2. Hairs few and small. In ventral view basis is broad, slightly convex, broadly rounded and salient behind. Auriculae absent. Transverse sutural line visible. Palpi flattened medially. Inner plate on article 1 visible as a small sub-oval plate.

Hypostome. Long with sides nearly parallel, apex rounded. Denticles 3/3 for about the terminal one-third, then 2/2 to the base. Denticles progressively smaller from the laterals to the median line. Length about 0.51 mm.

Scutum. Length, 1.8 mm.; width, 1.68 mm. A little longer than wide, widest in front of the middle; rounded behind. Scapulae long, thin and pointed. Lateral carinae distinct and curved, starting at the scapulae and nearly reaching the postero-lateral margins; more precipitous on the median than on the lateral sides. Cervical grooves shallow, indefinite, first convergent then divergent, and reaching posteriorly to opposite the termini of the carinae. Punctations numerous, moderate in size. Surface faintly shagreened, shining. Hairs very few and short (negligible).

Legs. Long and small. All tarsi terminating abruptly with subapical dorsal humps only moderate. Ventral hairs more numerous and coarser on leg IV than on I. Length of tarsis I, 0.75 mm.; metatarsus, 0.61 mm. Length of tarsus IV, 0.75 mm.; metatarsus, 0.72 mm.

Coxae. Coxae II, III, and IV mildly convex; salient on the posterior margins. Internal spur on I long, thin, and pointed; absent on all others. External spurs on all coxae short, rounded, and all about equal. A few hairs on all coxae.

Spiracular plate. Large, nearly circular, with the slightly longer axis transverse. Surface a little elevated over that of the body, faintly convex. Goblets numerous and large. Size 0.37 mm. by 0.35 mm.

Sexual opening. Situated between coxae III.

The specimen included as a paratype, differs from the holotype in having the palpi shorter (articles 2 and 3, 0.69 mm.), in hav-

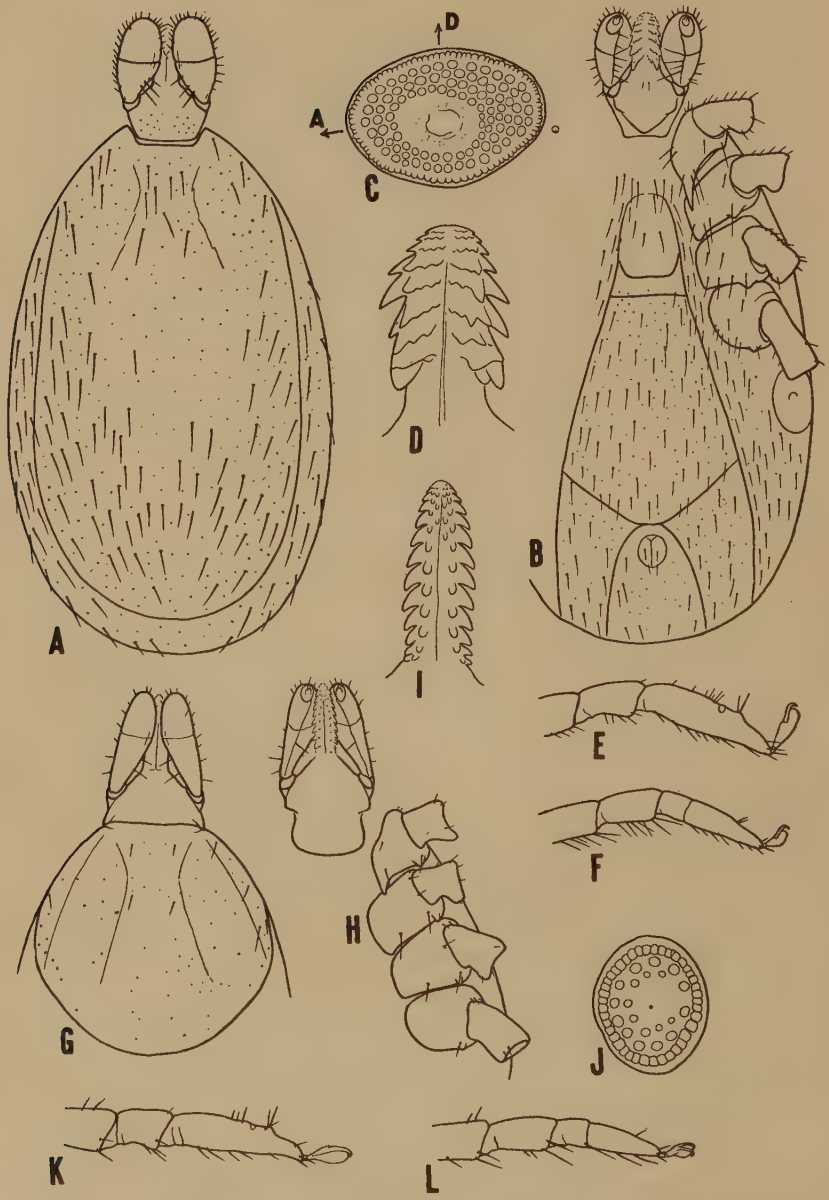


Figure 2. *Ixodes pacificus* Cooley and Kohls. A. Male capitulum and body, dorsal. B. Male capitulum and coxae, ventral. C. Male spiracular plate. D. Male hypostome. E. Male tarsus and metatarsus of leg I. F. Male tarsus and metatarsus of leg IV. G. Nymph, capitulum and scutum, dorsal. H. Nymph, capitulum and coxae, ventral. I. Nymph hypostome. J. Nymph, spiracular plate. K. Nymph, tarsus and metatarsus of leg I. L. Nymph, tarsus and metatarsus of leg IV.

ing the posterior margin of the basis a little depressed below the level of the cornua, and in having the scutum wider than long (length 1.71 mm., width 1.8 mm.). Closely related species have similar variations. The hypostome is lacking in the paratype.

Male unknown.

Holotype. Female, A. P. 17256, from a cave near NEW BRAUNFELS, TEXAS, September 13, 1940. Cave was evidently frequented by various animals.

Paratype. Female, A. P. 18440, from *Conepatus* sp., BREWSTER COUNTY, TEXAS, March, 1940.

Holotype deposited in the collections of the Rocky Mountain Laboratory. Paratype deposited in the United States National Museum.

The species is closely related to *marmotae* Cooley and Kohls, 1938, and *cookei* Packard, 1869. From *marmotae* it differs in lacking auriculae entirely and from both in being larger, in having longer legs and relatively longer palpi and hypostome. *I. conepati* is known only from southern Texas, *cookei* only from Eastern States, and *marmotae* only from Western States.

SUMAC-GALL APHID, MELAPHIS RHOIS (FITCH), IN ARIZONA

This very interesting aphid was collected in Cave Creek Canyon, Chiricahua Mountains, Arizona, August 22, 1943, on smooth, scarlet, or red sumac, *Rhus glabra* L., by Dr. Wyatt W. Jones. He described the galls as follows: "I was somewhat surprised to see very large, sac-like galls on reddish leaves and to find hundreds of small winged aphids within. The galls were apparently always within one-half inch of the base of the leaflet and very close to the mid-vein, but not attached to it. In general the galls are bladder-shaped, but more or less irregular. Some were larger in diameter than three-fourths of an inch."

This is primarily an eastern species and I have been able to find printed reports of its occurrence in New York (Fitch, 1886), Illinois (Walsh, 1866), Minnesota (Oestlund, 1887), New Jersey (Smith, 1890), Iowa (Osburn, 1892) Ohio (Cook, 1904, by Jackson, 1908), Kansas (Sanborn, 1906), Connecticut (Patch, 1923), North Carolina (Brimley, 1938). I also have mounted specimens from Ottawa, Canada (Ross, 1916), South Carolina (Nettles, 1933), and Pennsylvania (Pepper, 1938).—E. O. ESSIG.

THE GENUS CULICOIDES IN NORTHERN COLORADO
(Diptera, Ceratopogonidae)

BY MAURICE T. JAMES
Colorado State College, Ft. Collins, Colorado

During the summer of 1942, about 5000 specimens of *Culicoides* were taken in a light trap operated by Prof. Miriam A. Palmer on the campus of Colorado State College. This material, together with a few specimens obtained from other sources, supplied the material on which this paper is based. Ten determined species were taken in the Ft. Collins light trap; an eleventh is added from the Denver Mountain Parks Area.

I am indebted to Miss Palmer for the illustrations of the male genitalia.

Culicoides hieroglyphicus Malloch

This was by far the most abundant species in the Ft. Collins light trap, being represented by 2430 specimens, May 19 to September 16. It remained important throughout the season and during August and early September accounted for more than half the light trap catch. Also taken at Evergreen, Colorado, July 25, 1942 (James) 2 ♀♀.

The male genitalia show some variation. Some specimens are as in the illustration in Root and Hoffman; in others, the submedian projections of the ninth sternite are much shorter and the foot-like apex of the claspers is less pronounced.

Culicoides obsoletus Meigen

Light trap, Ft. Collins, 659 specimens, May 22 to September 18; unimportant, however, until about July 1, after which time it ran second in importance to *hieroglyphicus*.

Culicoides variipennis Coquillett

Light trap. Ft. Collins, 63 specimens, May 25 to August 31. Never present in great numbers in any catch.

Culicoides stellifer Coquillett

Light trap, Ft. Collins, 198 specimens, June 29 to Sept. 12. Unimportant except during the period from July 6 to August 2. Also taken at Evergreen, Colorado, July 25, 1942 (James) 2 ♀♀.

Culicoides baueri Hoffman

Light trap, Ft. Collins, 112 specimens, June 3 to August 5. Never of much importance; most abundant from June 15 to July 19.

Culicoides crepuscularis Malloch

Light trap, Ft. Collins, 481 specimens, May 16 to September 14. The first species to appear in the spring, it remained of approximately equal importance throughout the summer. Also taken at Evergreen, July 25, 1942 (James) 3♀.

Culicoides haematopotus Malloch

Light trap, Ft. Collins, 299 specimens, May 23 to September 14. Like *crepuscularis*, it remained of approximately equal importance throughout the summer, except for the tendency to show peaks of abundance in early July and early September.

Culicoides cockerelli Coquillett

Light trap, Ft. Collins, 7 specimens, June 3 to August 1. All specimens evidently are the same species, yet the coloration and pattern on the mesonotum varies considerably. In Root and Hoffman's key, some specimens may trace to *luteovenus*, but the wing pattern is quite different in the two species.

The male genitalia are in general quite similar to those of *C. luteovenus;* they agree with Root and Hoffman's illustration in the general structures of the ninth tergite, the side pieces and the claspers. The seta-like hairs of the side pieces, however, instead of forming a dense patch, spread over the entire inner surface. The aedoeagus is similar in structure, except that its chitinous supports unite in the middle. The harpes are similar except that their bases are a little more slender and the apices are somewhat recurved.

Culicoides stonei James, new species

Female. Head yellowish-brown. Eyes narrowly separated. Antennae yellowish-brown; last five segments subequal, fusiform; basal ones bead-like; ratio of length of last five combined to that of basal eight combined about 10:10. Palpi brown; third segment considerably inflated. Thorax yellowish-brown, its pollen uniformly yellowish-brown, without evident markings; pleura yellowish; legs yellow. Wings without light or dark spots; macrotrichia

rather uniformly distributed. Abdomen yellow. Length, 1-1.5 mm.

Male. Coloration as in female. Antennal plume yellow. Apicolateral processes of ninth tergite very large, inner process of side piece much smaller than the dorsal, claspers gently bent and slender beyond middle, harpes slender, simple, and pointed apically, rather stout and bent over themselves basally.

Holotype, male, allotype female, and paratopotypes, 6 males and 16 females, FT. COLLINS, COLORADO, June 17 to August 31, 1942, at light (M. A. Palmer).

In Root and Hoffman's key, this species traces to *C. unicolor*. In the key to male terminalia, it runs to couplet 9, but the tip of

Figure 1. *Culicoides stonei* James, male genitalia, x 300.

the aedoeagus is rounded instead of being either pointed or truncate. I take pleasure in naming the species after Doctor Alan Stone, who compared a female specimen and a sketch of the terminalia with *C. melleus* and *C. unicolor*, and decided that it was distinct from both those species.

CULICOIDES SIMULANS R. & H.

Evergreen, Colorado, July 25, 1942 (James), 22♀, 1♂.

The one male available shows slight variations in the genitalia from the Root & Hoffman figure, in that the harpes end in a single curve outward instead of an S-shaped curve, and the aedoeagus is rounded at the apex. These variations, however, are probably not of specific value.

Culicoides palmerae James, new species

Female. Head uniformly brown. Eyes narrowly separated. Antennae light brown; last five segments of flagellum subequal, fusiform; light basal one small, bead-like, ratio of combined length of last five to combined length of first eight 19:15. Palpi dark

Figure 2. *Culicoides palmerae* James, male genitalia, x 300.

brown; second segment four times, third twice, as long as wide, third definitely swollen and with a sensory pit near apex; ratio of length of second, third, fourth, and fifth segments about 4:5:1:1. Proboscis black.

Mesonotum brown; a very narrow median longitudinal stripe on the anterior half darker; indistinctly defined areas behind sensory pits more or less reddish brown; submedian spots on posterior half and prescutellar area dark. Legs brown; hind tibia with a light basal annulus. Wings brown, with two distinct light spots,

one at the cross-vein and one in cell R_5 beyond apex of cell R_3; also light spots which are usually large but more or less indistinct at apices of R_5, M_1, M_2, Cu_1, and anal cells, and near middle of wing. Abdomen yellowish-brown to almost black. Spermathecae 2, oval, about 50 by 75, base of duct very narrowly chitinized, rudimentary spermetheca present. Length, 1-1.5 mm.

Male. Coloration as in female. Antennal plume light brown, darker apically. Wings somewhat more slender than in female, and with markings less distinct. Genitalia very large, one-fourth length of abdomen, and of a very characteristic type. Ninth tergite extremely convex, notched at apex, and with exceptionally large, somewhat truncated apicolateral processes; claspers sharply bent at basal fourth, the inner angle being distinctly an acute one (about 60°); claspers slender beyond bend; aedoeagus and harpes also characteristic.

Holotype, male, allotype, female, and about 500 paratypes, male and female, Ft. Collins, Colorado, June 2 to August 26, 1942, at light (M. A. Palmer).

The thoracic pattern is indistinct; therefore, in Root and Hoffman's key (Amer. Jour. Hygiene, 25:152-154, 1937) this species should be placed in the second half of couplet 10, where it will trace best to *simulans* Root & Hoffman. In the key to male genitalia, it fits the first alternative of couplet 1, but may immediately be separated from all species treated there by the large, blunt apicolateral processes of the ninth tergite, as well as by the form of the claspers. The relationship among Nearctic species is probably closest to *simulans*, though, to follow Root and Hoffman's grouping based on genital characters, *palmerae* is deserving of a separate group rank.

Light trap, Ft. Collins, 581 specimens (not all types), June 2 to August 26. Most important from June 10 to July 21, during which time it was at least as abundant as *C. hieroglyphicus*.

DISCUSSION

Seasonal abundance at Ft. Collins in 1942, as indicated by the light trap, is shown in Fig. 3. The graph is based on estimated weekly totals, the estimate being made by totaling the weekly catch, multiplying by seven, and dividing by the number of daily samples. For example, if the light trap were operated five nights of a given week, the total of the five samples was multiplied by seven-fifths.

Three types of graphs are represented. In three species, *cre-*

puscularis, *variipennis*, and *haematopotus*, the size of the catch remains fairly constant throughout the season. Three other species, *palmerae*, *stellifer*, and *baueri*, have a definite season of abundance, and outside of this season occur as stragglers, if at

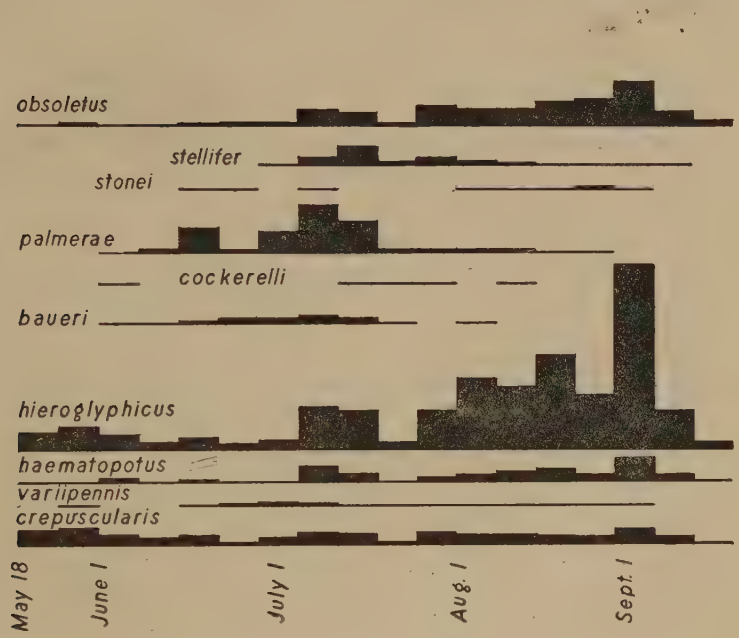


Figure 3. Seasonal abundance, by weeks of *Culicoides* species taken by light trap, Ft. Collins, Colorado, May 18 to September 18.

all. A third type, represented by *obsoletus* and *hieroglyphicus*, is a combination of the first two; the species occur throughout the season, but attain a definite peak of abundance in the late summer. *Cockerelli* and *stonei* are too scarce to place in a definite type, though they seem to belong to the second one.

A NEW GENUS OF HALIPLIDAE (COLEOPTERA) FROM CALIFORNIA

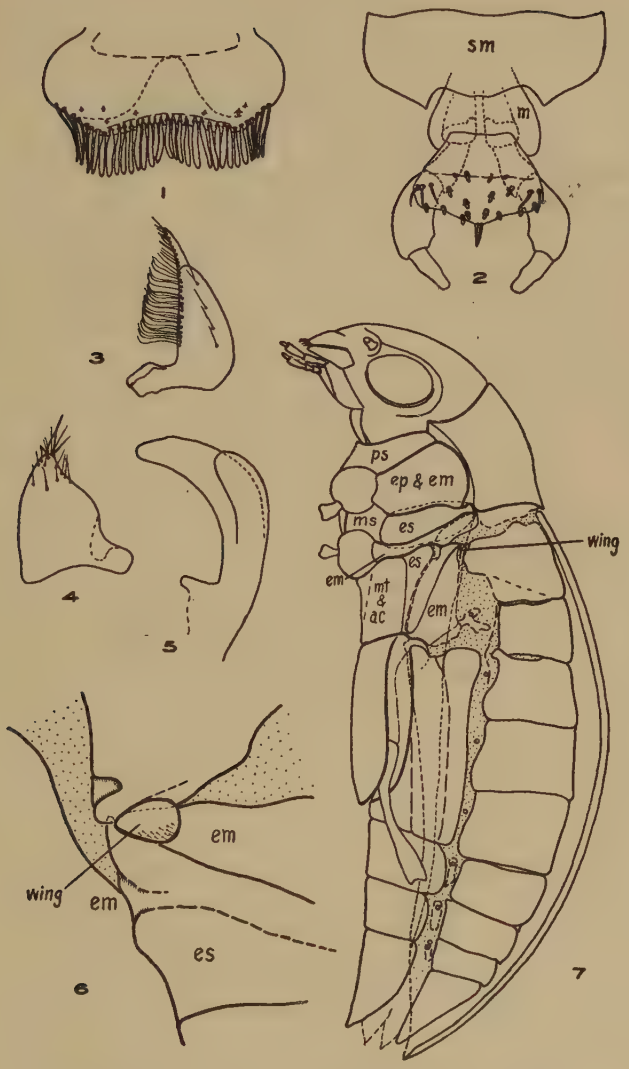
BY HARRY P. CHANDLER
University of California, Berkeley

Apteraliplus Chandler, new genus

Size small, 1.8-2.4 mm.; spindle-shaped, widest point at posterior two-fifths; hump-backed when viewed from side; highest point behind middle. *Head* with eyes small, prominent; antennae eleven segmented, two basal segments as long as wide; terminal segment of palpi much smaller than penultimate. *Pronotum* with basal portion transversely flattened; with a short, broad, punctured, basal depression on each side; sides roundly and evenly convergent; anterior margin transversely arcuate. *Elytra* conjointly depressed at base; not truncate at apex; each with ten regular rows of small weakly impressed, unpigmented punctures; with a row of very small setigerous punctures between the eighth and ninth striae; epipleura weakly differentiated, ending just before the last ventral segment of the abdomen. *Metathoracic wings* greatly reduced, scale like. *Prosternum* shallowly abruptly declivous along the median portion of the anterior margin; arcuately rounded from side to side; posterior process gently raised above the base, constricted between the coxae, convex, roundly truncate at apex, sides not margined. Suture between the episternum and epimeron obliterated. Episternum of the metathorax separating the metasternum from the epipleura. Anterior process of the metasternum elevated above base. Suture between metasternum and antecoxal piece obliterated. Hind coxae conjointly semi-circular, faintly punctured. *Abdomen* with three anterior sternites united, with sutures obliterated; three posterior sternites exposed; last sternite large, triangular; tip very strongly and closely punctured, margined with short setae. Legs with swimming hairs on outer posterior edge of the tarsi and the front and middle tibia; a setigerous striole on the inner distal half of the posterior tibia.

This genus is proposed for the single species described as *Brychius parvulus* Roberts[1], from a single specimen taken by Baker from San Mateo County, California. The species was not again recognized until two specimens were collected by T. Aarons from Lake Lagunitas on the Stanford University Campus, Palo Alto, California, which were determined by Dr. Van Dyke. Shortly afterward the author discovered one unidentified speci-

[1] Roberts, C. H. 1913. Critical notes on the species of Haliplidae of America North of Mexico with descriptions of new species. Jour. N. Y. Ent. Soc., 21:94-95.



APTERALIPLUS PARVULUS ROBERTS (HALIPLIDAE)

Fig. 1. Clypeus; Fig. 2. Labium; Fig. 3. Left paramere; Fig. 4. Right paramere; Fig. 5. Aedoeagus; Fig. 6. Wing region of female; Fig. 7. Side view of male with elytra removed (Note the greatly reduced wing). Abbreviations: *ac.*—antecoxal piece; *em.*—epimeron; *ep.*—episternum; *m.*—mentum; *ms.*—mesosternum; *mt.*—metasternum; *ps.*—prosternum; *sm.*—submentum.

men in the University of California collection, labeled Palo Alto, V-20-22, S. E. Flanders. On January 2, 1942, the author visited the locality in which Aarons had collected and secured a good series upon which this study is based. They were found abundantly in small pools. Lake Lagunitas is a reservoir which is dry during the late summer and fall months. With the coming of the winter rains this reservoir rapidly fills. This species was found in small shallow pools at the shallow end of the reservoir. These pools were located in a boggy region caused by the recent rains and seepage from a canal above, and had not yet connected in any way with the reservoir. It was estimated that the reservoir would reach and cover this section about two weeks after the collections were made. As three of the four known records are from Palo Alto, and as the border of San Mateo County (the type locality) is less than one mile distant from the above-mentioned reservoir, it appears that this species may have an extremely limited distribution. Its lack of wings makes impossible the usual method of Haliplid dispersal. The drainage system in which it is located is very short, extending a distance of less than 15 miles from the Coast range eastward to the south end of San Francisco Bay. As the swimming hairs of the legs are well developed and the adults are observed to swim quite well for a Haliplid, it appears that the species is adapted to still water and any dispersal in the drainage basin would be only in a down stream direction. There is a possibility that the eggs might be dispersed in mud on the feet of birds as is thought to be the case in various other fresh water animals. This would be less probable if the dry season is passed in the pupal stage which is most likely the case.

Roberts placed this species in the genus *Brychius* without giving any specific reasons. The shape of the pronotum has been used extensively to define the genus *Brychius* in keys and in this respect the flattened base of the pronotum and the weakly convergent sides do suggest *Brychius*. However, other characters show it to be much more closely related to some of the other Haliplids. Its nearest affinities, in so far as the author's knowledge of the family goes, is with the subgenus *Liaphlus* (genus *Haliplus*) from which it is amply separated for generic ranking. Carr[2] in his paper on North American species of *Brychius*,

[2] Carr, F. S. New species of the genus *Brychius*. Can. Ent., 60:26.

quotes Mr. Barber who studied the type as follows, "Its convex pronotum, with sides strongly arcuate and convergent, and with the basal impressions at lateral fourth deep but short without trace of the sinuate carina which in *elevatus* and *hornii* extends from the base at lateral sixth to apical fourth, together with the gibbous apically acuminate elytra and the much narrower and anteriorly not prominent prosternum, seem to me to be good enough characters for generic segregation."

The males may be separated from the females by the usual thickened protarsi; their smaller size and the narrower, more rounded apex of the prosternal process. The metathoracic wings of the male are almost entirely reduced, being doubtfully represented by an imbeded bristle like sclerite (Fig. 7). In the female they are represented by a scale like appendage, bearing a number of short setae on the lower half.

Key to the Genera of Haliplidae

1 Pronotum with sides of basal two-thirds nearly parallel, sometimes slightly sinuate, anterior margins strongly rounded, base with two longitudinal striae extending forward for more than half the length of the pronotum; epipleura broadly extending almost to the tip of the elytra, which are never truncate; metasternum reaching the epipleura; last abdominal segment usually acuminatly produced with a median longitudinal groove; form elongate; poor swimmers, usually found creeping along the bottoms of running streams, occasionally in lakes....*Brychius*

– Pronotum with sides widest at base and convergent anteriorly, with or without basal striae; epipleura evenly narrowed, usually ending near the base of the last ventral segment, never reaching the apex; episternum completely separating the metasternum from the epipleura; last abdominal segment without longitudinal groove; free swimming, usually found in still or slow-moving water.....2

2. Ultimate segment of palpi as large as penultimate labrum and clypeus small, width less than half the greatest diameter of the eyes; hind coxal plates margined, large, only the last sternite completely exposed; elytra with fine sutural striae; form broad and convex; general distribution in the warmer parts of the world.....*Peltodytes*

– Ultimate segment of palpi much smaller than penultimate; hind coxal plates not margined; last three sternites exposed; labrum broad, width more than half the diameter of the eyes, emarginate anteriorly; elytra without fine sutural stria.....3

3. Prosternum evenly rounded from side to side, process raised above base, narrowly constricted between coxae, apex roundly

truncate; tip of last abdominal sternite very closely and strongly punctate; wings reduced; suture between metasternum and antecoxal piece obliterated; size small (1.5–2.5 mm.); spindle-shaped; humpbacked. Known only from central California coastal region ..... *Apteraliplus*

– Medial portion of the prosternum and prosternal process forming a plateau-like elevation which is at least in part angularly separated from the lateral extensions of the prosternum, apex of posterior process squarely truncate; suture between the metasternum and antecoxal piece not obliterated; size large to small; general distribution in the cooler parts of the world. ..... *Haliplus*

NOMENCLATURE

BY T. D. A. COCKERELL

Citrus Experiment Station, Riverside, California

Nomenclature is not to be despised. It is a part of language, it is a means whereby we record and arrange our ideas. In bygone times, the human mind was aware of only a very small part of its environment, but science has enlarged our vision enormously, so that what we, collectively, know, can only be known in small part by any one individual. Most of our knowledge would be lost, were it not recorded in language, by means of names, by nomenclature.

There is one limitation to any system of rules, imposed by the methods of science. No committee or group may make a rule which asserts that which is false. Thus, it was recently shown that a certain author had proposed a generic name, without indicating any species. His specimens are preserved, and we now know whot he had. Later on another author described a species under what was presumed to be the same generic name, using, however, a different spelling. This species is not congeneric with that of the first author. Now it is alleged that the species of the second author must be the type of the genus of the first author, although the latter never saw it and actually had a different genus. This is manifestly absurd, and the way out of the difficulty is to ignore the name proposed by the first author, since he included no named species, and take up the name of the second author, with its type described by him.

More difficult is the problem of the generic name proposed

with the mention of a described species, but actually, so far as the author was concerned, based on another species, perhaps not congeneric. In such a case we must consider that the generic name was founded on an aggregate, regarded by the author as one species, but actually consisting of more than one. We should naturally refer the name to the species cited, but sometimes it happens that the author misunderstood that species, and based his genus on characters only possessed by some other specie, which he wrongly regarded as the same. If this species, in the possession of the author, had not been named or described, we have this dilemma: either the generic name must be considered as founded on the cited species, or else on a species which had not been described, in which case the name would have no valid basis. Sometimes the above facts could not be ascertained from a study of the published records. It seems very desirable to rule that in general unpublished information should not be used to describe questions of nomenclature, when it disagrees with what has been published. For example, a certain author described a "species" which actually consisted of two. Another writer took one of these as representing the species, but on looking, at a much later date, at the original specimens, the type label was found on the other species. Which then is the type of the species?

Perhaps the worst confusion arises from the interpretation by some authors of the rule concerning secondary homonyms. The matter came to a head in this form. Numerous species had been described in several related genera, and these genera were accepted by all except a certain French author, who threw them all together, with the result of finding a number of apparent homonyms, which had (it was held) to be renamed. Now certain authors claim that the saying "once a homonym always a homonym" legalizes this action, and compels us to use the substitute names. This in spite of the fact that, as I learned from Dr. K. Jordan, the whole of the International commission was opposed to such an interpretation, with the exception of Dr. Stiles. It amounts to saying that if a name has been falsely held to be a homonym, it becomes invalid, the whole matter being dominated by someone's mistake. This is surely absurd, and leads to a lot of unnecessary changes in names.

When an author has not designated holotypes, what is our duty in the case? For instance a German author, who described many hundreds of species, labelled all the specimens "type," and it

was well known that the series were frequently composites. Another German author proposed that he and I should go over the whole collection, and designate holotypes. Circumstances prevented this, but supposing we had done as proposed, should we have been at liberty to pick out a specimen at random from each series and label it holotype? Or should we have carefully read every word of each description, striving to ascertain, if possible, what it was the author actually described? The latter method seems more reasonable but some large and important collections have been type-labelled by the former, and the results are generally considered binding except as occasionally happens, when the holotype label is found on a specimen from a locality not represented in the original collection which the author used, or on a sex not known to the original author.

Notes on the Habits of Melecta sierrae Linsley

In May, 1942, the writer had the opportunity to make a few fragmentary observations on the habits of *Melecta sierrae* Linsley in the vicinity of Miami Ranger Station, Mariposa County, California. In this area it is a parasite of *Emphoropsis cinerea* Smith, subsp. nov. On May 12, an unemerged female was removed from a 1941 *Emphoropsis* cell series along with both sexes of the host. During the next ten days, *Melecta* were encountered frequently visiting flowers of manzanita (*Arctostaphylos* sp.) along with *Emphoropsis*, the females of which were collecting pollen. Females were also seen to enter *Emphoropsis* burrows on several occasions, always during the absence of the host. *Emphoropsis* appears to be only semi-gregarious, many of the burrows being solitary. They were most commonly encountered in banks but several were found in flat ground. The entrance is not protected by a turret.

Melecta sierrae flies much more slowly than its host. The females spend most of the day flying about in search for burrows of *Emphoropsis*, occasionally visiting manzanita flowers for nectar. At night and during periods of cold or wet weather the females remain in resting burrows excavated in the talus at the base of the banks in which the host bees are nesting. Several females may occupy the same burrow and will frequently share it with male *Emphoropsis* and occasionally with *Tetralonia* sp.—E. Gorton Linsley.

Abananote abana, 31, 32.
Acarina, 73, 139.
Acmaeodera **linsleyi, 101.**
moronga, 102.
purshiae, 78.
variegata, 78.
Acraea abana, 32.
Acraeinae, 31.
Actinote, 31.
Adelocera mexicana, 44.
nobilis, 44.
Adoretus sinicus, 7.
Aedes purpureipes, 86.
taeniorhynchus, 86.
varipalpis, 86.
Agabus lutosus, 75.
Agra **aethiops, 28.**
eurypelma, 29.
Altinote (A.) brownorum, 32.
neleus, 31, 32.
Amara (Cyrtonotus) **deparcus, 28.**
durangensis, 27.
putzeysi, 28.
Amblycheila cylindriformis, 85.
Anaferonia, 27.
Andrena caeruleonitens, 76.
complexa, 76.
sp., 76.
Anopheles p. pseudopunctipennis, 86.
Aphanotus brevicornis, 39.
Aphididae, 133, 147.
Aplastus **piceus, 43.**
speratus, 44.
Apteraliplus parvulus, 154.
Aradidae 60, 74, 138.
Aradus concinnus, 138.
depictus, 138.
Argyropile (see Megachile)
Armitage, H. M., Hawaiian Insects, 1.
Ashmeadiella opuntiae, 97.
rhodognatha, 96.
Attagenus, 39.
Atlas of Scale Insects, review, 79.
Berosus exilis, 61.
moerens, 62.
Blissus mixtus, 38, 59.
Brachysomida corpulenta, 119.
Brychius parvulus, 154.
Callisthenes, 18.
Calosoma **lariversi, 17.**
latipenne, 17.
luxatum, 18.
tepidum, 70.
z. exaratus, 19.
z. monticola, 19.
z. tahoensis, 18.
Cantharidae, 13.
Carabidae, 17, 92.
Carabus taedatus, 70.
Ceratitis capitata, 3.
Cerambycidae, 91, 119.
Ceratopogonidae, 148.
Chandler, H. P., Haliplidae, 154.
Chauliognathus ineptus, 64.
profundus, 64.
texanus, 61.
Cheligaster, 95.
Chinamyersia, 74.
Chrysomelidae, 74.
Cleridae, 134.
Coccus viridis, 6.
Cockerell, T.D.A., Nomenclature, 158.
Coenonycha, 39.
Coleoptera, 17, 41, 52, 61, 63, 69, 74, 75, 85, 91, 92, 101, 109, 119, 134, 154.
College Entomology, review, 62.
Compere, H., Metaphycus, 71.
Conoderes *attenuatus,* 44.
bicarinatus, 44.
duplicatus, 44.
laurentii, 44.
Cooley, R. A., Ixodes, 139.
Cosmolyce boetica, 7.
Culex restuans, 87, 89, 90.
stigmatosoma, 88, 89, 90.
tarsalis, 89, 90.
territans, 87.
thriambus, 87, 89, 90.
Culicidae, 86, 87.
Culicoides baeuri, 149.
cockerelli, 149.
crepuscularis, 149.
haematopotus, 149.
hieroglyphicus, 148.
obsoletus, 148.
palmerae, 151.
simulans, 150.
stellifer, 148.
stonei, 149.
variipennis, 148.
Cyclotrachelus, 27.
Cymbiodyta imbellis, 75.
Cyrtopeltis **bakeri, 58.**
Dacus curcurbitae, 4.
Decachaetophora aeneipes, 93, 95.
Dendrothripoides ipomeae, 5.
Dicyphus **brachypterus, 53.**
hesperus, 56.
rivalis, 54.
tinctus, 55.
usingeri, 53.

* New names in bold face type, synonyms in italics.

Diptera, 86, 87, 93.
Dyschirius **arizonicus**, 22.
Elater *sturmii*, 51.
Emphoropsis cinerea, 160.
Emydocoris testudinatus, 60.
Enicita annulipes, 94, 95.
Enicomicra, 95.
Epicauta pardalis, 38.
Eriophyidae, 73.
Essig, E .O., Laurel borer, 91.
Sumac-gall aphid, 147.
Eumolops heros, 27.
Euthysanius **wagneri**, 42.
Evarthrus (Anaferonia), 27.
c. ovipennis, 26.
Evarthrus (Ferestria) **morio**, 26.
herandensis, 26
taurus, 25.
Fender, K., Cantharidae, 63.
Feronia (Cryobius) **blaisdelli**, 24.
Feronia (Feronina) **humidula**, 23.
pacificus, 23.
Ferris, G. F., Nomenclature, 37, 38.
Fiorinia fioriniae, 6.
Galerucella decora, 74.
tuberculata punctipennis, 74.
xanthomelaena, 74.
Galindo, Culex thriambus, 87.
Gastroidea cyanea, 74.
Genital appendages, homologies 96.
Graptholitha molesta, 40.
Hagen, K. S., night collecting, 39.
Haliplus, 158.
Harrisiana brillians, 39.
Hawaiian insect fauna, 1.
Heliconius neleus, 31.
Hemiosus exilis, 61.
Hemiptera, 53, 59, 81, 138.
Heterotermes tenuis, 37.
Hydrophilidae, 61.
Hylus (Hypocoelus) frontosus, 52.
californicus, 52.
robustus, 52.
terminalis, 52.
Hymenoptera, 12, 71, 96, 112, 121, 129.
Hyperaspis **obscura**, 110.
Irbisia, 39.
Ischalia californica, 78.
Ithamar hawaiiensis, 5.
Ixodes californicus, 139.
conepati, 144.
pacifcus, 140.
James, M. T., Culicoides, 148.
Keifer, H. H., Graphtholitha, 40.
Harrisiana brillians, 39.
Kelley, T. F., Culex thriambus, 87.
Knight, H. H., Miridae, 53.
Kohls, G. M., Ixodes, 139.
Lange, W. H., Jr., Aphid host, 133.
Lasius niger neoniger, 76.
Leech, H. B., Hydrophilidae, 61.
Lepidosaphes ulmi, 39.
Leptinotarsa lineolata, 74.
Limonius **arizonicus**, 45.
canus, 46.
cribriceps, 44.
discoideus, 46.
infuscatus, 47.
i. pilosulus, 47.
i. vernalis, 47.
Linsley, E. G., collecting notes, 39.
Lassen Coleoptera, 75.
Melecta sierrae, 160.
Nomenclature, 35.
Longitarsus waterhousei, 74.
Ludius colossus, 49.
cribrosus, 49.
diversicolor, 50.
maurus, 49.
nigricans, 50.
rotundicollis, 50.
sierrae, 48.
truculentus, 48.
Lygaeidae, 59.
Macrophya rapae, 133.
Malkin, B., Chrysomelidae, 74.
Coccinellidae, 109.
Zuphium americanum, 52.
Malthodes **frosti**, 67.
humidus, 68.
oregonus, 66.
tularensis, 69.
visceratus, 69.
Maruca testulalis, 7.
Matsucoccus bisetosus, 36.
vexillorum, 36.
Mazzotti, L., Triatoma, 81.
McKenzie, H. L., Matsucoccus, 35.
Megachile (Argyropile), 12.
asterae, 13, 16.
flavihirsuta, 16.
nebraskana, 13, 16.
parallela, 12, 16.
p. reta, 16.
p. tulariana, 16.
rossi, 14, 16.
sabinensis, 13, 16.
townsendiana, 13, 16.

Megachilidae, 12.
Megapenthes sturmii, 51.
Megasteropus gigas, 27.
Melanotus longulus, 51.
oregonus, 51.
Melaphis rhois, 147.
Melecta sierrae, 160.
Meloe opacus, 76.
spp., 77.
Meropliosepsis, 95.
Meroplius, 95.
Metaphycus psyllidis, 72.
Metrobates trux, 40.
Mezira reducta, 37.
Michelbacher, A. E., tomato mite, 73.
Michener, C. D., Lassen Coleoptera, 75.
Ashmeadiella, Sex anomalies, 96.
Microbracon sp., 113.
Miller, R. C., Types, 37.
Miridae, 53.
Mitchell, T. B., Megachilidae, 12.
Monoxia guttulata, 74.
Moorhead, P., Oystershell scale, 39.
Mormoniella vitripennis, 112.
Muscidifurax raptor, 112.
Nebria coloradensis, 19.
eschscholtzi, 21.
metallica, 20.
zioni, 20.
Nemopoda, 95.
Nesaloha cantonis, 33.
Nomenclature, 35, 37, 38, 158.
Notoplocoris montei, 60.
Nysius delectus, 5.
coenosolus, 5.
Odonteus obesus, 79.
Oman, P. W., Cicadellidae, 33.
Orthopleura binotata, 137.
cyanipennis, 134.
guadeloupensis, 138.
hintoni, 134.
ichnoides, 137.
lepida, 137.
punctatissima, 137.
purpurea, 137.
quadraticollis, 135.
suturalis, 137.
teneroides, 137.
texana, 137.
Osmia lignaria, 79.
Oxybelus cocopa, 121.
pitanta, 123.
puente, 125.
Pachycrepoideus dubius, 113.
Palaeosepsis, 95.
Pandeletius viridissimus, 108.
Papilio (Heliconius) thalia, 31.
Paria canella, 74.
c. quadriguttata, 74.
Pasimachus californicus, 22.
velutinus, 21.
Pate, V. S. L., Oxybelus, 121.
Pectinophora gossypiella, 4.
Peltodytes, 157.
Phyllocoptes destructor, 73.
Plateros californicus, 76.
Pleocoma hoppingi, 39.
Plusiotus woodi, 38.
Podabrus brunneus, 65.
cascadensis, 64.
danielsi, 65.
Polyphylla crinita, 69.
diffracta, 104.
peninsularis, 103.
Potts, R. W. L., Acraeinae, 31.
Ambycheila cylindriformis, 85.
Scaphinotus coloradensis, 92.
Pratt, R. Y., Polyphylla, 69.
Prendergast, B., Blissus, 38, 59.
Pseudaradus, 74.
Pseudococcus brevipes, 5.
Pseudomorpha parallela, 30.
Psorophora discolor, 86.
signatipennis, 86.
Pterostichus ater, 75.
pacificus (see Feronia).
Ptinus californicus, 79.
Rhogogaster addenda, 132.
californica, 130.
lateraria, 132.
reliqua, 133.
resperus, 133.
sayi, 133.
viridis, 130.
Rhyncogonus simplex, 5.
Rosalia funebris, 91.
Ross, E. S., Culicidae, 86.
Ross, H. H., Sawflies, 129.
Saltella, 94.
Saxinus saucia, 74.
Scaphinotus coloradensis, 92.
Scarabaeidae, 69.
Scymnus fenderi, 109.
Sepsidae, 93.
Sepsidimorpha, 95.
Sepsis, 95.
simplex, 93.
Sex anomalies, 96.
Sphecidae, 121.

Stenomorphus rossi, 29.
Stenopogon inquinatus, 69.
Steyskal, G., Sepsidae, 93.
Temperature, low.
  Effect on reproduction, 112.
Tenthredo olivacea, 133.
Termitaphididae, 37.
Tetralonia sp., 160.
Thecabius populi-monilis, 133.
Themira, 95.
Thyce aurata, 105.
  cinerea, 106.
  clypeata, 107.
Timarcha cerdo, 74.
Trichodes basalis, 41.
  horni, 42.
Triatoma phyllosoma usingeri, 81.
  p. pallidipennis, 83.
  p. picturata, 83.
Usinger, R. L., Aradidae, 60, 74, 138.
  Book notices, 62, 79.
  Irbisia, 39.
  Metrobates trux, 40.
  Termitaphididae, 37.
Valgus californicus, 79.
Van Dyke, E. C., Carabidae, 17.
  Coleoptera, 41, 101.
  Collecting in S. W., 38.
Vespamima sequoiae, 37.
Vitula serratilineella, 39.
Wolcott, A. B., Cleridae, 134.
Xenodusa montana, 76.
Xylocopa californica, 39.
  orpifex, 39.
Zerene eurydice, 35.
Zimmerman, E. C., 35.
Zootermopsis, 37.
  nevadensis, 75, 79.
Zuphium americanum, 52.